REMARKS

This Response is in reply to the Office Action rejection mailed on March 9, 2007. Claims 1 – 7 are pending in the application, with each of the claims being rejected.

Claims 1, 2, and 5 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application 2003/0058474 (hereinafter Loce) in view of *Print Quality Metrics for Grayscale Text* (hereinafter Farrell). Loce discloses a method and apparatus for use in an image forming device to select and apply halftone screens that are compatible with text components based on certain characteristics of the text. A text component characteristic recognizer ascertains characteristics of the text such as font specification, font size, predominant angle of the text, and whether the text is italicized or bold. This information is communicated to a halftone screen selector which selects a halftone screen based on one or more of the recognized characteristics. The selection of a halftone screen is accomplished using predetermined threshold values programmed into or stored within the halftone screen selector. Loce does not disclose that a user may determine or input the threshold value.

Farrell discloses a study to evaluate the relationship between subjective ratings of print quality and two types of machine vision metrics. In general, machine vision systems utilize images obtained using optical sensors in order to process, analyze, and measure various characteristics so decisions can be made. The machine vision metrics studied were attribute metrics and image-based metrics. Attribute metrics include features that are known to affect print quality, such as optical ink density, jaggedness, and edge sharpness. Image-based metrics are based on the entire image and capture the perceptual similarity between a test sample and an offset print sample. The study involved subjective evaluation of print samples at various resolutions (dots per inch) and grayscale levels. The study concluded that the smaller the edge jaggedness, the higher the perceived print quality. Also, the perceived print quality increased with increasing resolution and the introduction of grayscale filtering. Finally, the study

found that there was no increase in perceived print quality with printer resolution and grayscale filtering and the measurement of edge sharpness.

Claim 1 includes providing a user interface for entering a font-sharpening threshold by a user, receiving the threshold from the user interface, and selecting a halftone screen based on text size and the threshold. The user-defined threshold value is a single integer value, in one embodiment ranging from 0 to 150. The value corresponds to the largest font size at which high frequency halftone screens will be used by an image forming device to print text characters. Loce does not disclose a **user-defined** font sharpening threshold, nor a user interface with which to input the threshold. The thresholds in Loce are fixed and nonadjustable by the user. Loce discloses that "[t]he halftone screen selector or generator 818 either selects a screen from a database of available screens or generates a screen for halftoning a particular text component in real time. ... Alternatively, the rendering quality related characteristics and other data are used as parameters in a halftone threshold generating function. ... In either case, for a given pixel, a halftone screen threshold is passed to the halftoner 822." (Paragraphs 0047 – 0048). The text component characteristic recognizer of Loce is preferably "implemented in software." (Paragraph 0052). Loce further discloses that "[t]he text component characteristic recognizer 814 may be part of a digital front end (DFE), or it may be part of, or benefit from the services of, a document page segmenter and/or character recognizer." (Paragraph 0052). Thus, Loce discloses an **automated** system within the image forming device to recognize text component characteristics and select a predetermined threshold from a database or generate a threshold in real time. Loce does not disclose nor suggest a user-defined and user-inputted threshold.

The Office Action also states that the disclosure in Loce of creating documents with electronic authoring tools such as word processing programs in which the author selects characteristics for the text used in the document discloses a user interface. This conclusion is incorrect. The electronic authoring tool is the software used to create the document to be

printed. The text size may be selected through the electronic authoring tool, but the threshold for selecting a halftone screen is completely separate. In comparison, one embodiment of a user interface in the form of a user panel on an imaging device is illustrated in Figure 3 of the present application. The user interface allows the user to manually input a font-sharpening threshold value to an image forming device **after** the document is created with, for example, an electronic authoring tool and sent to the image forming device. Loce does not disclose that the electronic authoring tool is an input at all. It merely discloses that the document to be printed has to be created in some way prior to printing, one of which is an electronic authoring tool. Thus, the electronic authoring tool is not a user interface.

The Office Action also concludes that the receiving of an image or document by the text component characteristic recognizer in Loce discloses a user-defined font sharpening threshold input. This conclusion is also incorrect. Loce discloses a method and apparatus for determining certain text component characteristics from the document and then determining the halftone screens based on predetermined thresholds that are not adjustable by the user. The image or document received by the text component characteristic recognizer merely contains the text characteristics (such as text size) that are subsequently compared to the predetermined thresholds. As explained above, Loce does not disclose a user-defined or user-inputted font sharpening threshold. Therefore, receiving an image or document by the text component recognizer is not a user-defined font sharpening threshold input.

Ferrell is concerned with defining print quality metrics for use with machine vision systems. The machine vision systems measure characteristics of the text after the text is printed. Ferrell has nothing to do with selecting a threshold for determining the halftone screens used for printing. Therefore, Ferrell does not disclose a user-defined font sharpening threshold, nor a user interface with which to input the threshold.

For at least these reasons, independent claim 1 and dependent claim 2 are not made obvious by Loce and Ferrell.

Claim 5 includes a user-defined font sharpening threshold and a user interface for entering the font sharpening threshold by a user into a printing system. As discussed above for claim 1, neither Loce nor Ferrell disclose a user-defined font sharpening threshold, nor a user interface. For at least the reasons stated above for claim 1, claim 5 is not made obvious by Loce and Ferrell.

Claims 3, 4, 6, and 7 were rejected under 35 U.S.C 103(a) as being unpatentable over Loce in view of Ferrell in further view of U.S. Patent 7,079,287 (hereinafter Ng). Ng discloses methods for processing post rastor image processed gray level image data by subjecting the data to halftone screen processing, then analyzing each pixel of the halftone screen processed data to criterion to determine if the pixel is a saturated color image. If so, the pixel is modified before being output to a printer. Ng also discloses allowing user input to make minor color adjustments of the image after printing a proof print. In addition, Ng discloses a user-adjustable threshold input for gray enhanced anti-aliasing technology (GRET) processing.

Claim 1 includes entering a font-sharpening threshold by a user, receiving the threshold from a user interface, and selecting a halftone screen based on text size and the threshold. Although Ng discloses a user input for making minor color adjustments and a user input for a GRET processing threshold, neither of these values is a threshold for selecting halftone screens. Ng teaches that the disclosed adjustments are made after the image data has been processed by the raster image processor (RIP): "The input image to the system is assumed to be a continuous-tone color separation (post-RIP rasterized image) after GCR (Gray Component Replacement) and UCR (Under Color Replacement) processings have already been applied." (Col. 4, lines 42 – 46). In contrast, the present application states that "the RIP 12 performs color conversion, color correction, and halftoning as needed." (Page 8, lines 12 – 13). Because the

halftone processing of the present application occurs **during the RIP process**, the font-sharpening threshold value must be entered prior to RIP processing. Because Ng teaches only **post-RIP** corrections, the user inputs of Ng cannot be font-sharpening thresholds for selection of halftone screens as taught by the present application.

Neither Loce, Farrell, nor Ng, either independently or in any combination, disclose each and every claim limitation of independent claim 1. Therefore, claim 1 cannot be found to be obvious over any combination of these references. For at least these reasons, dependent claims 3, 4, 6, and 7 are not obvious over Loce, Ferrell, and Ng.

The Office Action pointed out an apparent wording problem in claim 4 and provided suggested revised language for the claim. Although the suggested language was not used, the claim was amended to alleviate any possible confusion.

The Office Action suggested amendments to Claims 6 and 7 to provide proper antecedent basis for "the image output device." Appropriate amendment to each of these claims has been made.

Claim 6 was objected to under 37 C.F.R. 1.75(a) because the claim depends from itself. Appropriate amendment to the claim has been made.

In addition, claims 5 and 7 were amended to correct minor typographical errors.

The drawings were objected to because multiple drawings were shown with numerals pointing to empty boxes or objects. Figure 2 has been corrected to remove an unlabeled arrow. In Figure 3, Applicants note that the box labeled with reference number 42 is an LCD display panel (see page 6, line 19 of the specification), and the box represents a window on the display, not an empty box. Applicants also note that with respect to Figures 6 and 7, the numerals within boxes represent actual displays of numerals within an exemplary dialog box as may be displayed on a computer display (see page 12, lines 8 – 13). As such, these numerals do not refer to objects within the drawings.

The drawings were also objected to because reference number 20 was used to designate more than one object. Figure 2 has been corrected to change reference number 20 to 21. Figure 4 has been corrected to change reference number 20 to 23. The specification has also been amended as indicated above to reflect these changes.

Figure 2 was objected to because reference numbers 38 and 46 were not mentioned in the specification. Figure 2 has been corrected to remove reference numbers 38 and 46.

The specification was objected to because of an informality. Appropriate correction has been made as detailed above.

In view of the above amendments and remarks, the Applicants submit that the present application is in condition for allowance and such action is respectfully requested. If any issues remain unresolved, the Applicant's attorney requests a telephone interview to expedite allowance and issuance.

Respectfully submitted,

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